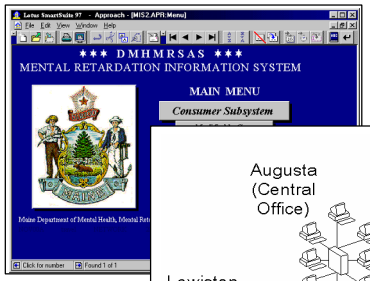
- Working with a physiologist at Dalhousie University in Halifax NS, programmed an interactive curve fitting feature (fig. 5) for a video densitometry system (C language).
- Working with laboratories at research hospitals in Detroit MI and Tampa FL, programmed several video image analysis systems for measuring tissue samples to detect nerve and muscle diseases, including extensive statistical analysis tools (BASIC, 80x86 assembly language).



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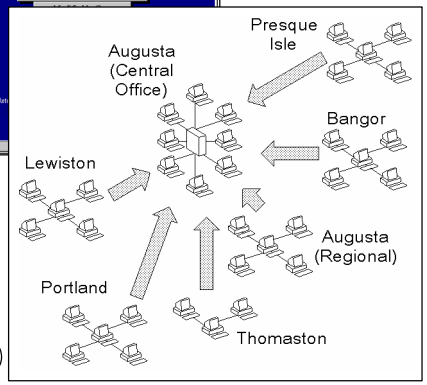
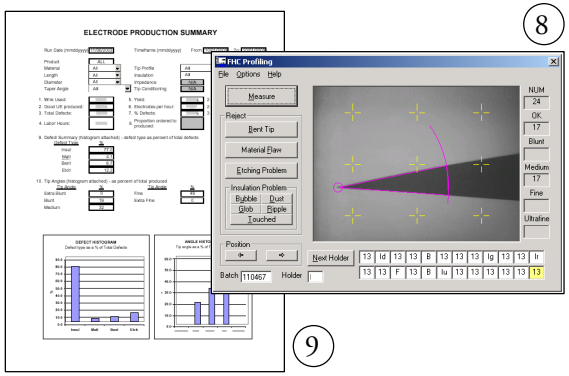


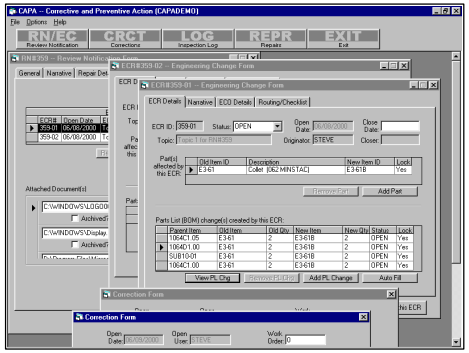
7

- For the State of Maine, developed a statewide information system, operating on seven regional networks (fig. 6,7), that models the delivery of community-based services for approximately 5000 persons with mental retardation (*Dbase*, Lotus *Approach*, *LotusScript*).
- Also for the State of Maine, supported the migration of the mental retardation application, along with 6 smaller applications connected to it, to an enterprise-scale web-based information system (Oracle *Designer*, Oracle *Reports*, *COGNOS*, *TOAD*).



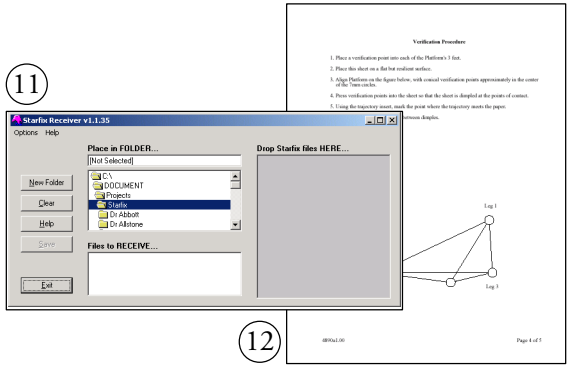
8 9

- Developed an industrial machine vision system for measuring and inspecting microelectrodes in production (*Visual BASIC*), and accompanying data analysis tools (*Access, Excel,* fig. 8, 9).
- Developed an application for CAPA (Corrective And Preventive Action) events and engineering changes in manufacturing for ISO, FDA and CE medical device compliance. Company became one of first two in Maine to meet the new ISO 9001:2000 standard (*Visual Basic*, linked to ERP system via ADO, ODBC, fig. 10).



10

- Developed an application that integrates a CRM system (*GoldMine*) with the company's ERP system (*Macola, DBA*), maintaining an ongoing link between these systems for each sale made (*Visual Basic*, ODBC, Windows shell programming and *DDE* application interoperability).



11 12

Developed an application that manages verification and Internet transmission of fabrication details for surgical fixtures used in deep brain surgery (*Visual Basic*, Windows *OLE* drag-and-drop, SMTP, 2D/3D graphics, fig 11, 12). □

11-07

COMMONWEALTH
SOFTWARE

9 West Commonwealth Dr · Portland ME 04103-1226

- **Custom Programming**
- **Database Applications**
- **Platform Migration**
- **System Documentation**
- **Imaging, Graphics, Visualization**

Commonwealth Software is a small application programming company owned by Steve Carpenter, who has been developing microcomputer-based systems in the areas of scientific research, manufacturing and government for more than 18 years.

With a record of timely, on-budget delivery, sustained customer satisfaction and modest prices, Commonwealth Software has been fully booked for more than 11 years, mainly with repeat business.

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APPROACH

COMMONWEALTH SOFTWARE specializes in original programming for Windows-based personal computers, delivering full solutions on schedule, with a professional level of quality, at reasonable cost, and with friendly, capable and highly available support.

Our approach originates with existing processes – paper forms, data tables, spreadsheets, older applications, or a large enterprise application that lacks a needed feature, and fills the gaps between systems you already have and the functionality you need.

Often the application can begin operating in a short time as a working prototype that both accomplishes the most urgently-needed tasks and also provides a platform on which further development can be evaluated and built. As work continues, components can be added in the order in which the need for them is most strongly felt.

This incremental, phased, iterative approach allows the system to be successful and to provide return on investment from an early stage, and improves the accuracy of cost estimates at every phase.

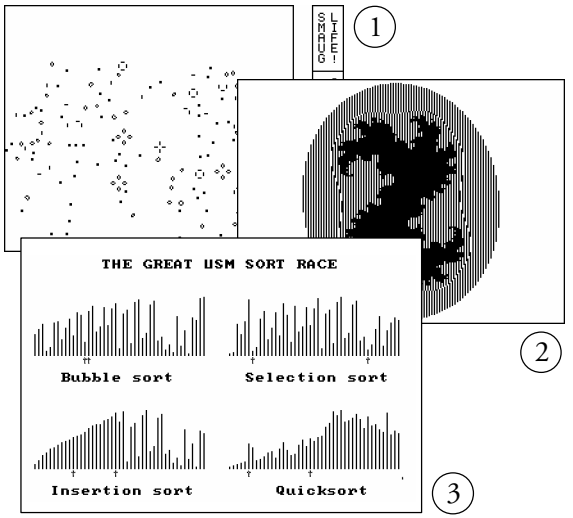
Much of the power of an iterative method depends on the developer's ability to carry out the challenging task of periodically "refactoring" the system as it grows – reorganizing it to keep it clean and modular. COMMONWEALTH SOFTWARE has an extended history of refactoring and of migrating a system's data seamlessly from one phase to the next.

SERVICES

1. ***Programming*** — Custom Windows programs written in Microsoft *Visual BASIC*, typically using a relational database for data storage and networked for multiuser operation. This is our core competency, and our programs have been assisting people in their daily work for a decade and a half. We can build an evolving system which develops at a pace that suits both the organization's needs and the evolving skills of its operators.
2. ***Documentation*** — A COMMONWEALTH SOFTWARE application is generally supplied with well-commented source code and an easy-to-read, fully-illustrated user manual, complete with detailed technical appendices.
3. ***Databases*** — Relational databases and database applications and analysis tools can be designed using *Visual BASIC,* Lotus *Approach* or Microsoft *Access* and/or your server-based DBMS, modeling a few or many of your organization's activities.
4. ***Data analysis*** — Using Lotus *Approach*, *COGNOS*, Oracle *Reports*, *Crystal Reports*, Microsoft *Access, Excel*, reporting processes and applications can provide vital metrics for your organization's activities based on live connectivity with your data.
5. ***Migration*** — Older custom programs and analytical tools can be adapted or migrated to operate on a newer platform.
6. ***Rescue*** — Custom programs that need updating or never worked right can be examined and made to work, readying them for further development. Older, dysfunctional programs often contain valuable ideas that incorporate the effort put into their development. Poorly-documented systems can be redocumented.

BACKGROUND

Steve Carpenter has more than twenty years experience with microsystems and in 1985 built the first two projects developed according to the phased approach described above. He is a graduate of Colby College with further education from the University of Minnesota, Johns Hopkins and USM. As editor of the Southern Maine Apple Users Group Newsletter for ten years, he has written articles about many computer topics including a 5-part series on *database management*, a 2-part series on *animated graphics*, a 2-part series on *structured programming*, the *LIFE biological simulation* (fig. 1), *fractal images* (fig. 2), *sorting algorithms* (fig. 3) and many others.



SAMPLE PROJECTS

- For a manufacturer in Brunswick ME, enhanced and maintained a custom multilevel manufacturing inventory control / AR / AP system. Converting it from single-user to multiuser operation (*DBase*/*Foxbase*).
- Developed a website that acquires its text from the company's catalog and derives its graphics from the company's CAD system, extensively saving content-development costs (HTML).
- Working with a scientist at the National Institutes of Health in Bethesda MD, programmed a 3D plotting enhancement (fig. 4) for a serial reconstruction program (C, 80x86 assembly language).